

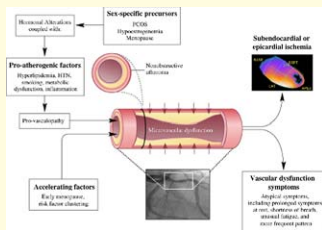


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STATE-OF-THE-ART PAPER



JACC WHITE PAPER

STATE-OF-THE-ART PAPER

Women and Ischemic Heart Disease

1561

Leslee J. Shaw, Raffaele Bugiardini, C. Noel Bairey Merz

Shaw and colleagues review the state of the art for treatment and evaluation of women with ischemic heart disease (IHD). Although women are less likely to have obstructive coronary artery disease (CAD) and are more likely to have preserved systolic function, they have higher short-term mortality than men. This paradoxical difference appears to be linked to coronary reactivity, especially microvascular dysfunction. Microvascular dysfunction may be more prevalent in women because of risk factor clustering and hormonal alterations. The authors propose that symptoms occurring due to coronary microvascular dysfunction that result in myocardial ischemia should be called "microvascular angina" and that anti-anginal therapies can improve symptoms, endothelial function, and quality of life; however, sex-specific trials evaluating adverse outcomes are needed.

JACC WHITE PAPER

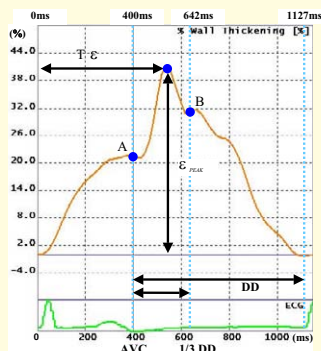
Reviewing the Data on Unprotected Left Main Stenting

1576

David E. Kandzari, Antonio Colombo, Seung-Jung Park, Carl L. Tommaso, Stephen G. Ellis, Luis A. Guzman, Paul S. Teirstein, Corrado Tamburino, John Ormiston, Gregg W. Stone, George D. Dangas, Jeffrey J. Popma, Theodore A. Bass, on behalf of the American College of Cardiology Interventional Scientific Council

Currently, intersociety guidelines recommend against unprotected left main (UPLM) percutaneous revascularization as an optional therapy in individuals eligible for coronary artery bypass grafting (Class III) and support the indication with still uncertain benefit (Class IIb) only in patients with excessive surgical risk. In this paper, Kandzari and colleagues argue that the current guidelines are outdated, as several clinical trials and registries addressing this subject have recently been published. The authors review the currently published data and conclude that even in patients without excessive surgical risk percutaneous revascularization can be considered, especially if the anatomy is favorable, for example, isolated ostial or shaft lesions. The authors also lay out the many questions that will need to be answered before widespread adoption of UPLM stenting can be considered.

CLINICAL RESEARCH



CORONARY ARTERY DISEASE

Strain Imaging Detects Prolonged Impairment of Diastolic Function After Transient Ischemia

1589

Katsuhisa Ishii, Tamaki Suyama, Makoto Imai, Motoyoshi Maenaka, Asuka Yamanaka, Yasunaka Makino, Yutaka Seino, Kenei Shimada, Junichi Yoshikawa

Ishii and colleagues studied whether strain imaging (SI), which measures the extent of regional myocardial shortening and lengthening, could detect ischemia-induced alterations in diastolic and systolic function. Regional left ventricular transverse peak strain and strain changes during the first one-third of diastole (strain imaging diastolic index [SI-DI]) were measured in “at-risk” segments after temporary balloon occlusion in 30 patients undergoing percutaneous coronary intervention. Coronary occlusion induced a marked regional reduction in both systolic strain and SI-DI. Upon reperfusion, systolic strain parameters returned to pre-occlusion values quickly. However, SI-DI remained depressed for up to 24 h after reperfusion. SI analysis provides detailed mechanical characterization of regions with myocardial insult and can demonstrate post-ischemic diastolic stunning despite complete systolic functional recovery.

BIOMARKERS AND CARDIAC SURGERY

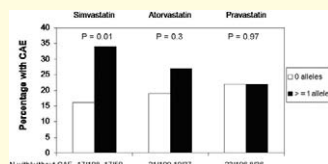
BNP Level May Improve Pre-Operative Risk Assessment CME

1599

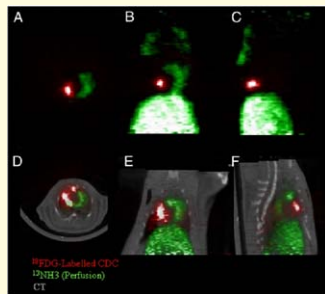
Ganesan Karthikeyan, Ross A. Moncur, Oren Levine, Diane Heels-Ansdell, Matthew T. V. Chan, Pablo Alonso-Coello, Salim Yusuf, Daniel Sessler, Juan Carlos Villar, Otavio Berwanger, Matthew McQueen, Anna Mathew, Stephen Hill, Simon Gibson, Colin Berry, Huei-Ming Yeh, P. J. Devereaux

Karthikeyan and colleagues conducted a systematic review and meta-analysis to determine if pre-operatively measuring brain natriuretic peptide (BNP) (or N-terminal proBNP) independently predicts 30-day adverse cardiovascular outcomes after noncardiac surgery. Nine studies met eligibility criteria and included over 3,000 subjects and over 300 perioperative cardiovascular complications. The average proportion of patients with elevated BNP was 25, but the threshold for elevation varied in the different studies. All studies showed a statistically significant association between an elevated pre-operative BNP and various cardiovascular outcomes (e.g., a composite of cardiac death and nonfatal myocardial infarction, atrial fibrillation). These results suggest that physicians can use a pre-operative BNP measurement to substantially improve their perioperative cardiovascular risk predictions, but more research is required to determine appropriate thresholds in various patient categories.

Editorial Comment: Daniel Bolliger, Manfred D. Seeberger, Miodrag Filipovic, p. 1607



PRE-CLINICAL RESEARCH



GENETICS AND STATIN EFFECTS

Genetic Variant Associated With Risk of Statin-Induced Myalgias

1609

Deepak Voora, Svati H. Shah, Ivan Spasojevic, Shazia Ali, Carol R. Reed, Benjamin A. Salisbury, Geoffrey S. Ginsburg

Voora and colleagues sought to identify single nucleotide polymorphisms (SNPs) that are associated with mild statin-induced side effects such as myalgias. Subjects in the STRENGTH (Statin Response Examined by Genetic Haplotype Markers) study were randomized to both low and high doses of various statins. The primary end point was a composite adverse event (CAE), defined as discontinuation for any side effect, myalgia, or creatine kinase $>3\times$ baseline. SNPs associated with reduced function in 5 genes of the cytochrome P450 system were identified. CAEs occurred in 20% of subjects and were more prevalent in women and in carriers of the *SLCO1B1**5 variant. There was evidence for a gene-dose effect with *SLCO1B1**5, further confirming this finding. This variant allele has previously been found to interfere with localization of the hepatic drug transporter to the plasma membrane, and these data associate this SNP with even mild adverse effects induced by statin therapy.

Editorial Comment: Joseph S. Rossi, Howard L. McLeod, p. 1617

PRE-CLINICAL RESEARCH

PET Imaging Can Quantify Efficacy of Cardiac Stem Cell Transplantation

1619

John Terrovitis, Riikka Lautamäki, Michael Bonios, James Fox, James M. Engles, Jianhua Yu, Michelle K. Leppo, Martin G. Pomper, Richard L. Wahl, Jurgen Seidel, Benjamin M. Tsui, Frank M. Bengel, M. Roselle Abraham, Eduardo Marbán

Terrovitis and colleagues describe their use of positron emission tomography (PET) to quantify retention of cardiac-derived stem cells (CDCs) and to evaluate different delivery methods. CDCs derived from male rats were labeled with [^{18}F]-fluoro-deoxy-glucose (^{18}FDG) and injected into the ischemic region of female rats following permanent left coronary artery ligation. ^{18}FDG PET imaging was then compared with quantitative polymerase chain reaction (PCR) for the male-specific *SRY* gene. Baseline myocardial retention of cells 1 h after delivery was 18% by PCR and 18% by PET. The efficacy of various interventions was also measured: 76% if given immediately after coronary occlusion, 35% when given with adenosine to slow the heart rate, and 37% when fibrin glue was used to hold the cells in place. In vivo PET imaging permits accurate measurement of CDC retention and will allow for comparison of techniques to improve engraftment in beating hearts.

Editorial Comment: Gary S. Feigenbaum, Louis Lemberg, Joshua M. Hare, p. 1627